

Stillbirth Rate and Perinatal Mortality Rate, Michigan, 2010-2018

Prepared by Maternal Child Health (MCH) Epidemiology Section,
Michigan Department of Health and Human Services (MDHHS)
Data source: Michigan Resident Live Birth Files (9/5/2019), Infant Mortality Files (1/22/2020),
and Fetal Death Files (1/8/2020), Division for Vital Records and Health Statistics, MDHHS
February 2020



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4/20/2020

1

This presentation provides updated stillbirth and perinatal mortality statistics for the State of Michigan.

This presentation was prepared by the Maternal and Child Health Epidemiology Section, Michigan Department of Health and Human Services (MDHHS)

Data source: Michigan Resident Live Birth Files (9/5/2019), Infant Mortality Files (1/22/2020), and Fetal Death Files (1/8/2020), Division for Vital Records and Health Statistics, MDHHS

Revised: February 2020

Stillbirth Rate, Michigan, 2010-2018

4/20/2020

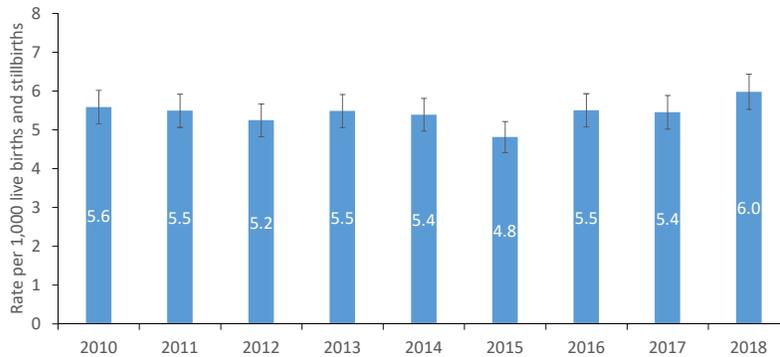
2

The next several slides contain updated stillbirth statistics for the State of Michigan.

Stillbirth Rate: Michigan 2010-2018

(rate per 1,000 live births + stillbirths)

Stillbirth Rate, Michigan, 2010-2018



Year	# Live Births	# Stillbirth	# Live Births + Stillbirths	SBR
2010	114,717	644	115,361	5.6
2011	114,159	630	114,789	5.5
2012	112,708	594	113,302	5.2
2013	113,732	627	114,359	5.5
2014	114,460	620	115,080	5.4
2015	113,211	547	113,758	4.8
2016	113,374	627	114,001	5.5
2017	111,507	611	112,118	5.4
2018	110,093	662	110,755	6.0

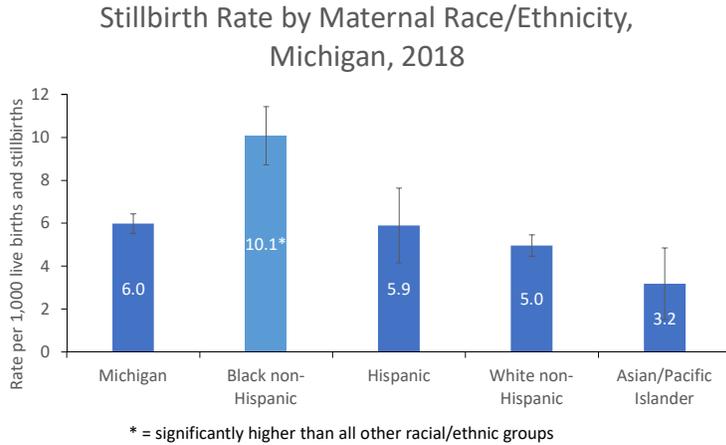
SBR= Stillbirth rate per 1,000 live births and stillbirths.

The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

4/20/2020
Data source: Michigan resident live birth files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the stillbirth rates within Michigan from 2010 to 2018. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, but the rate is now expressed per 1,000 live births and stillbirths. In 2018, the stillbirth rate was 6.0 per 1,000 live births and stillbirths. The stillbirth rate has fluctuated a bit over the last nine years and there was a statistically significant increase from 2015 to 2018.

Stillbirth Rate by Maternal Race/Ethnicity, Michigan, 2018 (rate per 1,000 live births + stillbirths)



Race/Ethnicity	# Live Births	# Stillbirth	# Live Births + Stillbirths	SBR
Michigan	110,093	662	110,755	6.0
Black non-Hispanic	20,440	208	20,648	10.1
Hispanic	7,421	44	7,465	5.9
White non-Hispanic	74,453	371	74,824	5.0
Asian/Pacific Islander	4,385	14	4,399	3.2

SBR= Stillbirth rate per 1,000 live births and stillbirths.

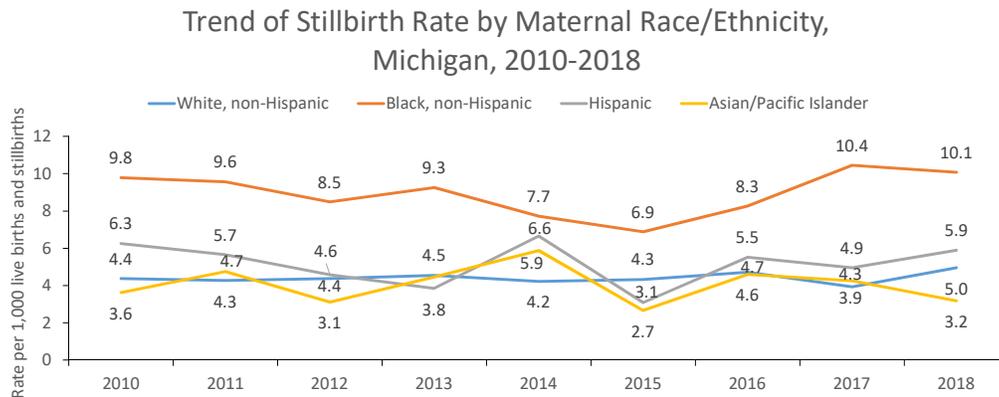
The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

4/20/2020
Data source: Michigan resident live birth files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

4

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the stillbirth rates by maternal race/ethnicity within Michigan in 2018. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, but the rate is now expressed per 1,000 live births and stillbirths. In 2018, there was over a three-fold difference in stillbirth rates by maternal race and ethnicity, from a high of 10.1 per 1,000 live births and stillbirths among Black non-Hispanic women to a low of 3.2 per 1,000 live births and stillbirths among Asian/Pacific Islander women. The stillbirth rate among Black non-Hispanic women was significantly higher than the rates among all other racial/ethnic groups.

Stillbirth Rate by Maternal Race/Ethnicity, Michigan, 2010-2018 (rate per 1,000 live births + stillbirths)



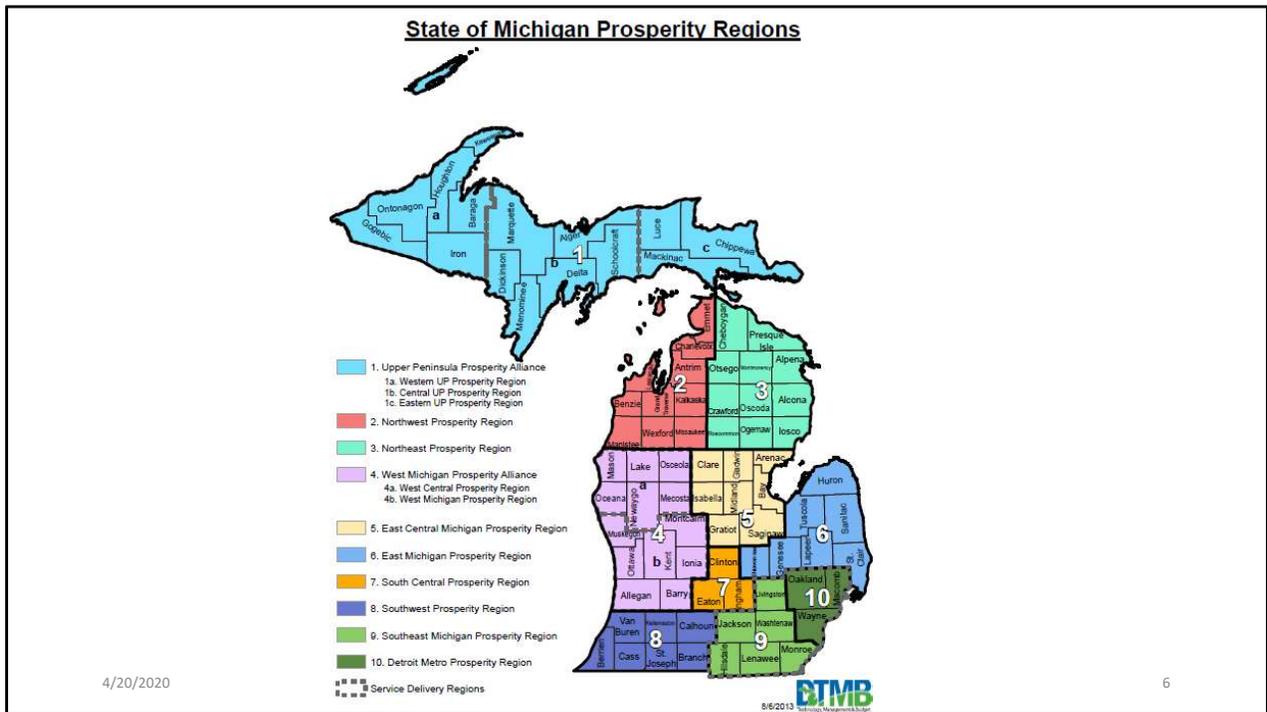
The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

4/20/2020

Data source: Michigan resident live birth files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

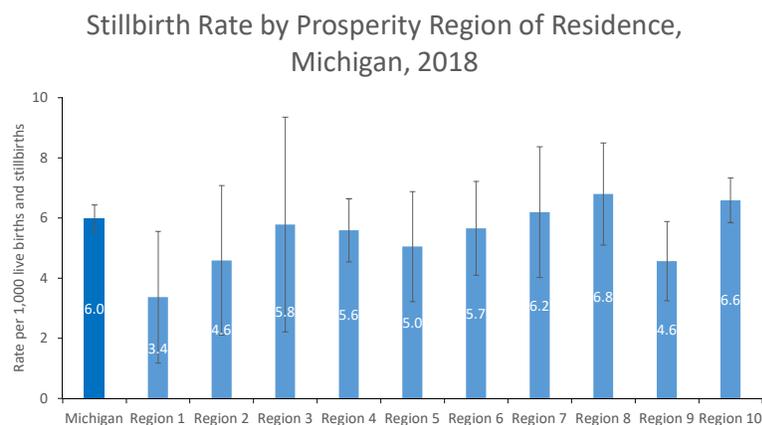
5

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the trend of stillbirth rates by maternal race/ethnicity within Michigan from 2010 through 2018. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, but the rate is now expressed per 1,000 live births and stillbirths. The stillbirth rate has fluctuated quite a bit over the last nine years by maternal race/ethnicity with Black non-Hispanic women experiencing a significant increase in their stillbirth rate since 2015.



This slide shows the prosperity regions within the State of Michigan.

Stillbirth Rate by Prosperity Region of Residence, Michigan, 2018 (rate per 1,000 live births + stillbirths)



Prosperity Region	# Live Births	# Stillbirth	# Live Births + Stillbirths	SBR
Michigan	110,093	662	110,755	6.0
1. Upper Peninsula Prosperity Alliance	2,666	9	2,675	3.4
2. Northwest Prosperity Region	2,821	13	2,834	4.6
3. Northeast Prosperity Region	1,720	10	1,730	5.8
4. West Michigan Prosperity Alliance	19,218	108	19,326	5.6
5. East Central Michigan Prosperity Region	5,720	29	5,749	5.0
6. East Michigan Prosperity Region	8,792	50	8,842	5.7
7. South Central Prosperity Region	4,972	31	5,003	6.2
8. Southwest Prosperity Region	8,915	61	8,976	6.8
9. Southeast Michigan Prosperity Region	10,035	46	10,081	4.6
10. Detroit Metro Prosperity Region	45,233	300	45,533	6.6

SBR= Stillbirth rate per 1,000 live births and stillbirths.

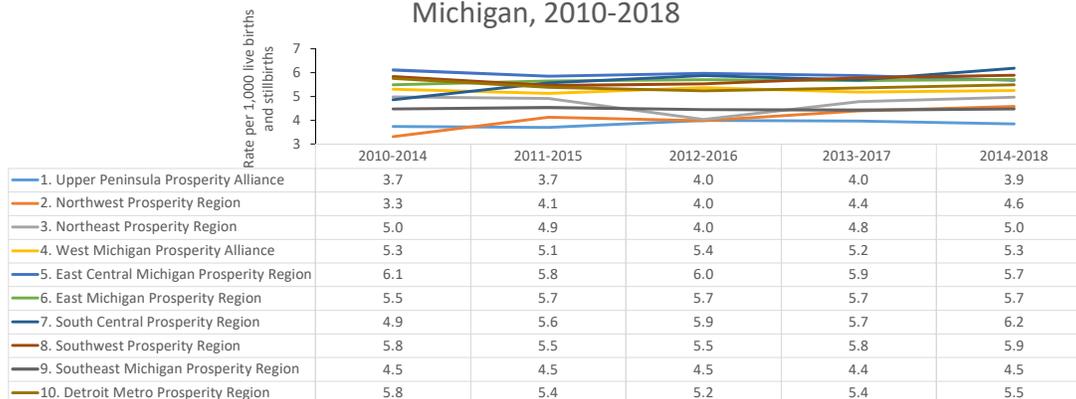
The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

4/20/2020
Data source: Michigan resident live birth files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the stillbirth rates by prosperity region of residence at birth within Michigan in 2018. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, but the rate is now expressed per 1,000 live births and stillbirths. In 2018, the stillbirth rate was the highest (6.8 per 1,000 live births and stillbirths) in the Southwest Prosperity Region and the lowest in the Upper Peninsula Prosperity Alliance (3.4 per 1,000 live births and stillbirths), but there were no statistically significant differences by prosperity region, when compared to the State of Michigan stillbirth rate.

Stillbirth Rate by Prosperity Region of Residence, Michigan, 2010-2018 (rate per 1,000 live births + stillbirths)

Trend of 5-Year Average Stillbirth Rate by Prosperity Region, Michigan, 2010-2018



The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

4/20/2020
Data source: Michigan resident live birth files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

8

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the trend of 5-year average stillbirth rates by prosperity region of residence at birth within Michigan from 2010 through 2018. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, but the rate is now expressed per 1,000 live births and stillbirths. The stillbirth rate has fluctuated a little bit over the years by prosperity region. In 2014-2018, the average stillbirth rate was the highest in the South Central Prosperity Region (6.2 per 1,000 live births and stillbirths) and the lowest in the Upper Peninsula Prosperity Alliance (3.9 per 1,000 live births and stillbirths). The average stillbirth rates within most prosperity regions have been on a slow decline since 2010-2014, except within regions 1, 2, 6, 7, and 8 which have increased slightly between 2010 and 2018. In most years, the average stillbirth rates were higher in regions 5, 7 and 10, and lower in region 1, compared to the rates within other prosperity regions.

Perinatal Mortality Rate, Michigan, 2010-2018

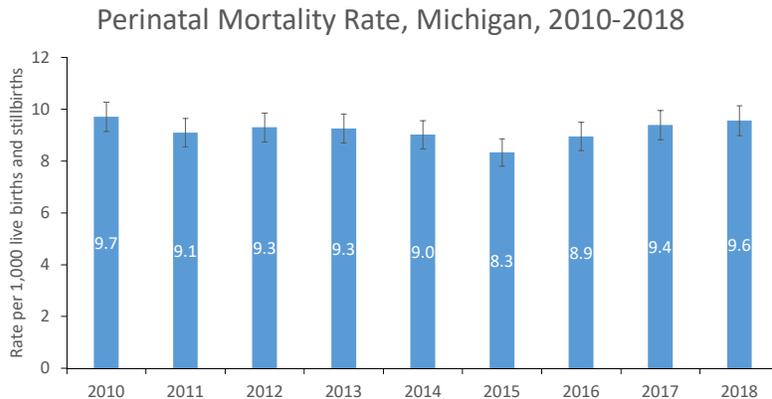
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9

The next several slides contain updated perinatal mortality statistics for the State of Michigan.

Perinatal Mortality Rate: Michigan 2010-2018

(rate per 1,000 live births + stillbirths)



Year	# Live Births	# Perinatal Mortality	# Live Births + Stillbirths	PMR
2010	114,717	1,119	115,361	9.7
2011	114,159	1,044	114,789	9.1
2012	112,708	1,053	113,302	9.3
2013	113,732	1,058	114,359	9.3
2014	114,460	1,037	115,080	9.0
2015	113,211	947	113,758	8.3
2016	113,374	1,020	114,001	8.9
2017	111,507	1,052	112,118	9.4
2018	110,093	1,058	110,755	9.6

PMR= Perinatal mortality rate per 1,000 live births and stillbirths.

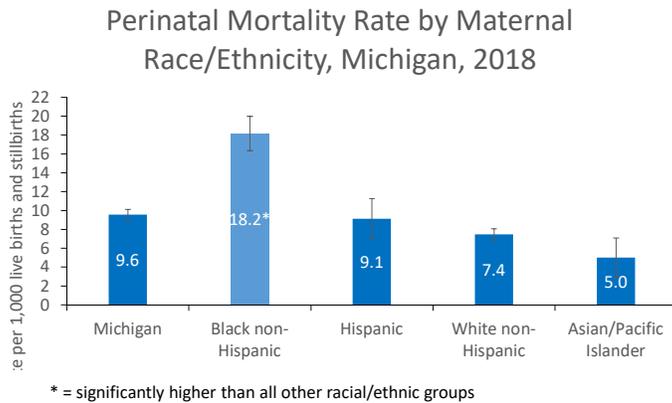
The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

Perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths.

4/20/2020
Data source: Michigan resident live birth files, infant death files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the perinatal mortality rates within Michigan from 2010 to 2018. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, and perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths and expressed per 1,000 live births and stillbirths. In 2018, the perinatal mortality rate was 9.6 per 1,000 live births and stillbirths. The perinatal mortality rate has fluctuated a bit over the last nine years and there was a statistically significant increase from 2015 to 2018.

Perinatal Mortality Rate by Maternal Race/Ethnicity, Michigan, 2018 (rate per 1,000 live births + stillbirths)



Race/Ethnicity	# Live Births	# Perinatal Mortality	# Live Births + Stillbirths	PMR
Michigan	110,093	1,058	110,755	9.6
Black non-Hispanic	20,440	375	20,648	18.2
Hispanic	7,421	68	7,465	9.1
White non-Hispanic	74,453	557	74,824	7.4
Asian/Pacific Islander	4,385	22	4,399	5.0

PMR= Perinatal mortality rate per 1,000 live births and stillbirths.

The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

Perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths.

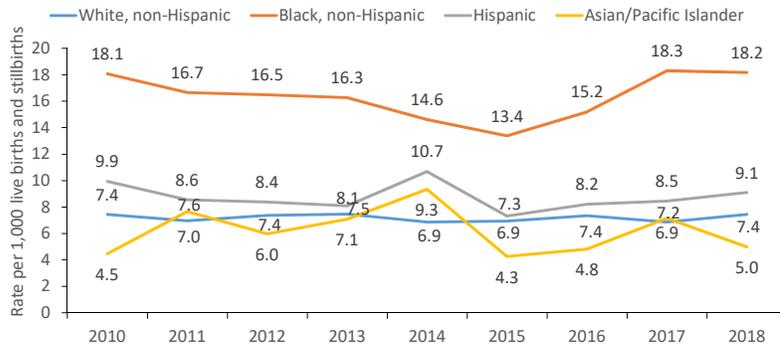
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Data source: Michigan resident live birth files, infant death files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

11

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the perinatal mortality rates by maternal race/ethnicity within Michigan in 2018. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, and perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths and expressed per 1,000 live births and stillbirths. In 2018, there was over a three-fold difference in perinatal mortality rates by maternal race and ethnicity, from a high of 18.2 per 1,000 live births and stillbirths among Black non-Hispanic women to a low of 5.0 per 1,000 live births and stillbirths among Asian/Pacific Islander women. The perinatal mortality rate among Black non-Hispanic women was significantly higher than the rates among all other racial/ethnic groups.

Perinatal Mortality Rate by Maternal Race/Ethnicity, Michigan, 2010-2018 (rate per 1,000 live births + stillbirths)

Trend of Perinatal Mortality Rate by Maternal Race/Ethnicity, Michigan, 2010-2018



The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

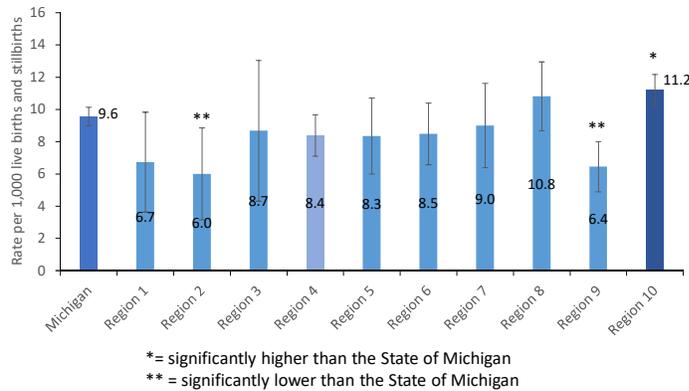
Perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths.

4/20/2020
Data source: Michigan resident live birth files, infant death files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the trend of perinatal mortality rates by maternal race/ethnicity within Michigan from 2010 through 2018. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, and perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths and expressed per 1,000 live births and stillbirths. The perinatal mortality rate has fluctuated quite a bit over the last nine years by maternal race/ethnicity with Black non-Hispanic women experiencing an increase in their perinatal mortality rate since 2015.

Perinatal Mortality Rate by Prosperity Region of Residence, Michigan, 2018 (rate per 1,000 live births + stillbirths)

Perinatal Mortality Rate by Prosperity
Region of Residence,
Michigan, 2018



Prosperity Region	# Live Births	# Perinatal Mortality	# Live Births + Stillbirths	PMR
Michigan	110,093	1,058	110,755	9.6
1. Upper Peninsula Prosperity Alliance	2,666	18	2,675	6.7
2. Northwest Prosperity Region	2,821	17	2,834	6.0
3. Northeast Prosperity Region	1,720	15	1,730	8.7
4. West Michigan Prosperity Alliance	19,218	162	19,326	8.4
5. East Central Michigan Prosperity Region	5,720	48	5,749	8.3
6. East Michigan Prosperity Region	8,792	75	8,842	8.5
7. South Central Prosperity Region	4,972	45	5,003	9.0
8. Southwest Prosperity Region	8,915	97	8,976	10.8
9. Southeast Michigan Prosperity Region	10,035	65	10,081	6.4
10. Detroit Metro Prosperity Region	45,233	510	45,533	11.2

PMR= Perinatal mortality rate per 1,000 live births and stillbirths.

The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

Perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths.

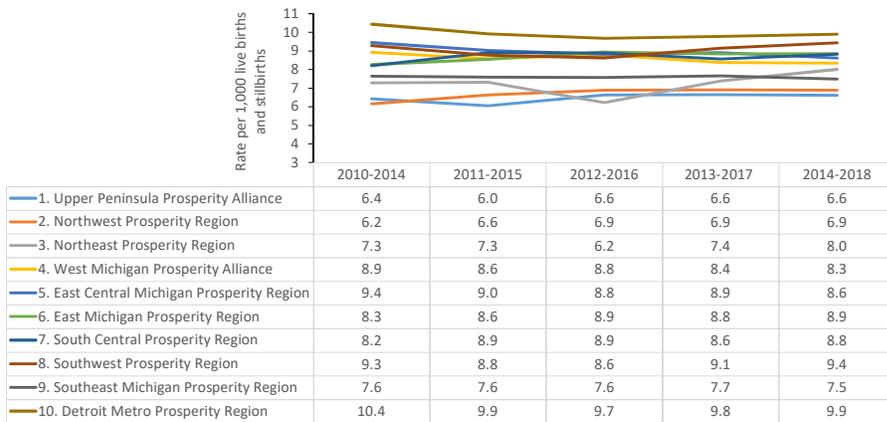
4/20/2020
Data source: Michigan resident live birth files, infant death files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

13

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the perinatal mortality rates by prosperity region of residence at birth within Michigan in 2018. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, and perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths and expressed per 1,000 live births and stillbirths. In 2018, the perinatal mortality rate was the highest in the Detroit Metro Prosperity Region (11.2 per 1,000 live births and stillbirths) and the lowest in the Northwest Prosperity Region (6.0 per 1,000 live births and stillbirths). The perinatal mortality rate was significantly higher in the Detroit Metro Prosperity Region and was significantly lower in the Northwest Prosperity Region and Southeast Michigan Prosperity Region, when compared to the State of Michigan rate.

Perinatal Mortality Rate by Prosperity Region of Residence, Michigan, 2010-2018 (rate per 1,000 live births + stillbirths)

Trend of 5-Year Average Perinatal Mortality Rate by
Prosperity Region, Michigan, 2010-2018



The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

Perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths.

4/20/2020

Data source: Michigan resident live birth files, infant death files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

14

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the trend of 5-year average perinatal mortality rates by prosperity region of residence at birth within Michigan from 2010 through 2018. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, and perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths and expressed per 1,000 live births and stillbirths. In 2014-2018, the average perinatal mortality rate was the highest in the Detroit Metro Prosperity Region (9.9 per 1,000 live births and stillbirths) and the lowest in the Upper Peninsula Prosperity Alliance (6.6 per 1,000 live births and stillbirths). From 2010 to 2018, the average perinatal mortality rates within prosperity regions 1, 2, 3, 6, 7 and 8 have shown a slow increasing trend, however, the average perinatal mortality rates with prosperity regions 4, 5, 9 and 10 have shown a slow decline over the same time period.

Limitations of Stillbirth Reporting

- It is suspected that stillbirths are under-reported by some Michigan hospitals. However, the records that are reported by the Division for Vital Records and Health Statistics do undergo a series of data checks.
- The stillbirth rates may fluctuate due to small numbers.
- Another limitation is the lack of information on etiology. The causes of many stillbirths are unknown. Known causes of stillbirth generally fall into one of three broad categories: problems with the baby (birth defects or genetic problems); problems with the placenta or umbilical cord (this is where the mother and baby exchange oxygen and nutrients); and certain conditions in the mother (for example, uncontrolled diabetes, high blood pressure, or obesity). However, we are unable to confirm the causes for all stillbirths.

4/20/2020

15

This slide shows the limitations of stillbirth reporting.

It is suspected that stillbirths are under-reported by some Michigan hospitals. However, the records that are reported by the Division for Vital Records and Health Statistics do undergo a series of data checks.

Stillbirth rates also tend to fluctuate a bit from year to year due to small numbers.

Another limitation is the lack of information on etiology. The causes of many stillbirths are unknown. Known causes of stillbirth generally fall into one of three broad categories: problems with the baby (birth defects or genetic problems); problems with the placenta or umbilical cord (this is where the mother and baby exchange oxygen and nutrients); and certain conditions in the mother (for example, uncontrolled diabetes, high blood pressure, or obesity). However, we are unable to confirm the causes for all stillbirths.